

I CLAIM:

1. An apparatus for electro-polishing a medical implant, comprising:
 - an anode adapted to contact a surface of said medical implant, thereby establishing an electrical contact between said anode and said medical implant;
 - a roller operably driven by a motor and contacting said medical implant, said roller thereby being adapted to continuously rotate said medical implant;
 - a cathode spaced away from said anode; and
 - wherein said electrical contact between said anode and said medical implant continuously changes as an electrical voltage is applied across said anode and said cathode and said roller is rotated by said motor, said medical implant thereby being electro-polished while minimizing the generation of marks on said medical implant at said electrical contact.
2. The apparatus according to claim 1, further comprising an amp-hour meter, said amp-hour meter measuring a cumulative current flow between said anode and said cathode.
3. The apparatus according to claim 1, wherein said anode extends along an entire length of said medical implant.
4. The apparatus according to claim 1, wherein said anode contacts an inner surface of said medical implant.
5. The apparatus according to claim 4, wherein said anode is a wire extending longitudinally through a cylindrical cavity of said medical implant, said anode contacting said inner surface of said medical implant along a side surface of said wire.

6. The apparatus according to claim 5, wherein a diameter of said wire is 75% or less than an inner diameter of said medical implant.

7. The apparatus according to claim 1, wherein said anode and said roller are different elements.

8. The apparatus according to claim 1, wherein said anode is made from platinum and said cathode is made from a same material as said medical implant.

9. The apparatus according to claim 1, wherein said cathode comprises at least two cathodes elements, each of said cathode elements defining a loop wherein said loops are spaced apart from each other.

10. The apparatus according to claim 1, wherein said roller rotates said medical implant between about 5 revolutions per minute and 60 revolutions per minute.

11. The apparatus according to claim 10, wherein said roller rotates said medical implant about 35 revolutions per minute.

12. The apparatus according to claim 1, wherein said roller comprises grooves extending longitudinally thereon, said grooves thereby assisting in driving said medical implant as said roller rotates.

13. The apparatus according to claim 1, wherein said roller is oriented at an angle between a horizontal orientation and a vertical orientation.

14. The apparatus according to claim 1, wherein said anode is attached to a swing arm, said swing arm adapted to lift said anode and

medical implant out of an electrolytic bath while leaving said roller and said cathode immersed in said electrolytic bath.

15. The apparatus according to claim 1, wherein said anode contacts an inner surface of said medical implant; said anode extends along an entire length of said medical implant; said anode is a wire extending longitudinally through a cylindrical cavity of said medical implant, said anode contacting said inner surface of said medical implant along a side surface of said wire; and said roller contacts an outer surface of said medical implant.

16. The apparatus according to claim 15, wherein a diameter of said wire is 75% or less than an inner diameter of said medical implant; said roller rotates said medical implant between about 5 revolutions per minute and 60 revolutions per minute; and said roller comprises grooves extending longitudinally thereon, said grooves thereby driving said medical implant as said roller rotates.

17. The apparatus according to claim 1, wherein said anode contacts an inner surface of said medical implant; said anode extends along an entire length of said medical implant; said anode is a wire extending longitudinally through a cylindrical cavity of said medical implant, said anode contacting said inner surface of said medical implant along a side surface of said wire; and said roller contacts an outer surface of said medical implant; and further comprising an amp-hour meter, said amp-hour meter measuring a cumulative current flow between said anode and said cathode.

18. An apparatus for electro-polishing a stent, comprising:
an anode adapted to contact an inner surface of said stent, thereby establishing an electrical contact between said anode and said stent;
a roller adapted to contact an outer surface of said stent, said roller being made of a non-conductive material;

a motor operably driving said roller, said roller thereby being adapted to continuously rotate said stent;

a cathode spaced away from said anode; and

wherein said electrical contact between said anode and said stent continuously changes as an electrical voltage is applied across said anode and said cathode and said roller is rotated by said motor.

19. The apparatus according to claim 18, further comprising an amp-hour meter, said amp-hour meter measuring a cumulative current flow between said anode and said cathode.

20. The apparatus according to claim 18, wherein said anode extends along an entire length of said stent.

21. The apparatus according to claim 18, wherein said anode is a wire about 0.025 inch or less in diameter.

22. The apparatus according to claim 18, wherein said anode is made from platinum and said cathode is made from a same material as said stent.

23. The apparatus according to claim 18, wherein said cathode comprises at least two cathode elements, each of said cathode elements defining a loop wherein said loops are spaced apart from each other.

24. The apparatus according to claim 18, wherein said roller rotates said stent between about 5 revolutions per minute and 60 revolutions per minute.

25. The apparatus according to claim 24, wherein said roller rotates said stent about 35 revolutions per minute.

26. The apparatus according to claim 18, wherein said roller comprises grooves extending longitudinally thereon, said grooves thereby assisting in driving said stent as said roller rotates.

27. The apparatus according to claim 18, wherein said roller is oriented at an angle between a horizontal orientation and a vertical orientation.

28. The apparatus according to claim 18, wherein said anode is attached to a swing arm, said swing arm adapted to lift said anode and stent out of an electrolytic bath while leaving said roller and said cathode immersed in said electrolytic bath.

29. The apparatus according to claim 18, wherein said anode extends along an entire length of said stent; and wherein said anode is a wire with a diameter 75% or less than an inner diameter of said stent.

30. The apparatus according to claim 18, wherein said roller rotates said stent between about 5 revolutions per minute and 60 revolutions per minute; and said roller comprises grooves extending longitudinally thereon, said grooves thereby driving said stent as said roller rotates.

31. The apparatus according to claim 30, further comprising an amp-hour meter, said amp-hour meter measuring a cumulative current flow between said anode and said cathode.

32. The apparatus according to claim 18, wherein said roller is oriented at an angle between a horizontal orientation and a vertical orientation; and said anode is attached to a swing arm, said swing arm adapted to lift said anode and stent out of an electrolytic bath while leaving said roller and said cathode immersed in said electrolytic bath.

33. The apparatus according to claim 18, wherein said anode extends along an entire length of said stent; said anode is a wire with a diameter 75% or less than an inner diameter of said stent; said anode is made from platinum and said cathode is made from a same material as said stent; said roller comprises grooves extending longitudinally thereon, said grooves thereby driving said stent as said roller rotates; said roller is oriented at an angle between a horizontal orientation and a vertical orientation; and said anode is attached to a swing arm, said swing arm adapted to lift said anode and stent out of an electrolytic bath while leaving said roller and said cathode immersed in said electrolytic bath.

34. A method of electro-polishing a stent, comprising:
immersing in an electrolytic bath said stent, an anode and a cathode;
contacting a surface of said stent with an anode, thereby forming an electrical contact;
continuously moving said electrical contact, thereby continuously changing said electrical contact;
applying a voltage across said anode and said cathode, said stent thereby being electro-polished while minimizing the generation of marks on said stent at said electrical contact.

35. The method according to claim 34, further comprising measuring a cumulative current flow between said anode and said cathode.

36. The apparatus according to claim 34, wherein said anode contacts an inner surface of said stent; and said stent is continuously rotated.

37. The apparatus according to claim 36, wherein said anode extends along an entire length of said stent; and said stent is rotated between about 5 revolutions per minute and 60 revolutions per minute.

38. The method according to claim 37, further comprising measuring a cumulative current flow between said anode and said cathode.

39. The apparatus according to claim 38, wherein said anode is a wire with a diameter 75% or less than an inner diameter of said stent; and said anode is made from platinum and said cathode is made from a same material as said stent.

40. The apparatus according to claim 39, wherein said anode is oriented at an angle between a horizontal orientation and a vertical orientation; and said anode is attached to a swing arm, said swing arm adapted to lift said anode and stent out of said electrolytic bath.